



2010

**Wisconsin Energy Independent
Community Partnership**

**25 x 25 Plan for Energy
Independence**

Report completed by:

City of Monona

Issue Date:

December 6 , 2010

Wisconsin Office of Energy Independence

This page intentionally left blank

Table of Contents

Overview	3
What was measured? Why?	4
Discoveries/Surprises	6
Total Projects Considered	7
Pathways to 25 x 25	8
Projects Selected – Explanation	9
Narrative – Potential Renewable Feedstocks	11
Existing Unknowns – Necessary Information for Future	12
Action Steps – Immediate & Long - Term	13
Energy Independence Team Members	14
Appendix – Baseline Energy Consumption Data – Spreadsheets	

Overview

Introduction

The Wisconsin Office of Energy Independence (OEI) administers energy programs to assist Wisconsin to profitably and sustainably promote energy efficiency and renewable energy resources. The goal of the Wisconsin Energy Independent Community Partnership administered by the OEI is to effectively increase energy independent assessments for Wisconsin communities. Currently, there are many communities across the State of Wisconsin interested in implementing and adopting renewable energy and energy efficient projects. This program will assist 10-15 communities that could be potential pilots or models for completing an energy independence assessment, allowing the community to then move forward with energy efficiency and/or renewable energy projects.

Definition

- Energy Independent Community (EIC) – a community that is willing to set a goal of “25 by 25” to increase our energy independence, and promote a sustainable energy policy for the State of Wisconsin

Objectives

The objectives of the Wisconsin Energy Independent Community Partnership are to:

- Increase the use of renewable energy and renewable fuels by 25% by 2025 in across the State of Wisconsin.
- Increase and promote public awareness regarding the benefits of increased energy conservation, energy efficiency, and renewable energy use by counties and municipalities around the state. These benefits include and are not exclusive to: clean air and water, intelligent land management, rural and urban economic development, as well as state and national energy independence.

Eligible Participants

Applicant must be a Wisconsin county, city, village or town that has shown willingness to improve the community's efforts related to energy conservation, efficiency and potential renewable opportunities. Applicants, if they are responsible for their own municipal water, sewer, or electrical system, must be in compliance with all appropriate state and federal regulations.

Resolution

The Monona City Council adopted a resolution in October 2009 supporting the 25x25 energy independence goals and declaring Monona a Wisconsin Energy Independence Community Partner (see the appendix for a copy of the resolution).

Energy Committee

In January 2010 the Monona Energy Committee was formed. Appointments were made by the City Administrator and approved by the Mayor. The seven member committee is made up of departments heads, city staff and a citizen member. The committee was charged with developing a plan to achieve the objectives of the Governor's 25x25 Energy Independence Goals.

Proclamation

In September 2010 the Mayor signed a proclamation designating October as Energy Awareness Month in the City of Monona (see the appendix for a copy of the proclamation).

What was measured? Why?

The first step in achieving our energy independence goals was to establish our three year energy and fuel consumption baseline. To do this we gathered our electric and natural gas consumption for all City owned facilities from our local utility, Madison Gas and Electric. These facilities included City Hall, Community Center, Pool, Library, Public Works Garage, park shelters, lift stations, wells, reservoirs, and water towers. Street lighting electric consumption was also inventoried.

Fuel usage was collected by fuel type (unleaded gasoline and diesel) and by department (Police, Fire, Public Works). The City's fuel tracking software is currently not setup to track fuel consumption on a per vehicle basis.

Buildings & Facilities

The City of Monona currently (end of 2010) has five buildings with a total of 99,800 square feet of floor space, three park shelters with restrooms with a total of 1,825 square feet of floor space, three wells, three reservoirs, two water towers with a total of 3,010 square feet of floor space, nine sanitary lift stations and two stormwater lift stations with a total of 320 square feet of floor space for a total of 104,955 square feet of floor space.

No new building construction is anticipated in the near future.

Energy Consumption

The following chart shows the baseline energy consumption (electric in kWh and natural gas in therms) by building / facility for years 2007, 2008, 2009. Electrical usage is for the building / facility only. Parking lot lighting electrical usage is not included.

Facility	Square Feet	kWh	Therms
City Hall	29,450	318,853	26,929
Community Center	12,000	188,960	16,744
Pool	3000	144,166	14,438
Library	26,882	237,960	14,756
Public Works Garage	28,468	78,826	12,994
Park Shelters	1,825	11,321	NA
Lift Stations	320	70,412	NA
Wells, Reservoirs, Water Towers	3,010	519,770	1,101
Street Lighting	NA	476,994	NA
Totals	104,955	2,047,262	86,962

2009 Wisconsin Energy Independent Community Partnership

Fuel Consumption

The following chart shows the baseline fuel consumption (gasoline and diesel) by department for years 2007, 2008, 2009. The City of Monona has a total of 48 vehicles as of the end of 2010, 30 gasoline vehicles (one of the 30 vehicles is a gasoline/electric hybrid) and 18 diesel vehicles. The City uses 17,000 gallons of gasoline and 6,740 gallons of diesel a year.

The Police Department has 35% of the gasoline vehicles and uses 40% of the total gasoline. The Fire Department has 7% of the gasoline vehicles and 35% of the diesel vehicles. The Fire Department uses 9% of the total gasoline and 11% of the total diesel. The Public Works Department has 58% of the gasoline vehicles and 67% of the diesel vehicles. The Public Works Department uses 51% of the total gasoline and 89% of the total diesel.

Department	No of Vehicles	Gasoline Vehicles	Gallons	Diesel Vehicles	Gallons
Police	11	11	6,807	0	0
Fire	8	2	1,506	6	720
Public Works	29	17	8,687	12	6,020
Total	48	30	17,000	18	6,740

Discoveries/Surprises

The Energy Committee was surprised to discover how many energy efficient measures have been implemented at various City facilities. The table below outlines the energy efficiency measures implemented prior to 2010.

Project	Location
Office Lighting Replaced with Energy Efficient Lighting	City Hall, Library, Public Works Garage
Lighting Controls Replaced with Motion Activated Controls	City Hall, Public Works Garage
Heating System Replaced with More Efficient System	Public Works Garage
Water Heaters Replaced with Tankless Water Heater	Pool
Roof Insulation Replaced	City Hall, Well/Reservoir 3
Purchase Hybrid Vehicle	Police Department

Focus on Energy has also completed energy audits for City Hall, Community Center, Library, Public Works Garage, and Pool.

In the spring of 2011 the City of Monona will replace existing boilers in City Hall and the Library with new energy efficient boilers, replace the pneumatic control systems with a digital control systems at City Hall, Library and Community Center, replace air handlers at the Community Center, and replace windows at City Hall. This work is intended to make these buildings more energy efficient. Also in 2011 the circulation pump at the Pool will be replaced with a variable frequency pump. This new pump will use 20% - 30% less energy to operate.

Perhaps the biggest surprise was that even with the previous efforts how much electricity, natural gas, and fuel the City of Monona uses on a yearly basis. On an annual basis the City uses 2,047,262 kWh, 86,967 therms, 17,000 gallons of unleaded gasoline, and 6,741 gallons of diesel. City facilities use enough electricity to power approximately 10% of the homes in the City of Monona. The City of Monona budgets approximately \$380,000.00 per year for utilities or 3% of the entire City budget.

Total Projects Considered

The City of Monona looked at multiple potential projects. The following table details the type of project and potential project location.

Infrastructure Projects Considered to Meet 25 by 25 Goal

<i>Type of Project</i>	<i>Location / Department</i>
Solar Panels	Fire Department roof Well and Reservoir 3 roof City Hall Roof Ahuska Park Shelter Roof
Solar Thermal	Community Pool
Variable Frequency Pump	Community Pool Well 1, 2, 3
Geothermal	Winequah Park (Serve City Hall, Library, Community Center)
Energy Efficiency - 2011 (replace boilers, controls, air cooling condensing units, windows)	City Hall Library Community Center
Energy Efficiency - 2012 - 2025 (replace air handling equipment, boilers at Community Center)	City Hall Library Community Center
Upgrade Windows	Community Center
Upgrade Insulation at City Facilities	City Hall Library Community Center
Electric Vehicles (NEV's)	Public Works Parks and Recreation
Bio-Diesel	Public Works
E85	Public Works
Purchase Clean Energy	Entire City
Retrofit Street Lighting with LED Lights	All City Streets
Install Two Electric Vehicle Charging Stations	Community Center

Along with the infrastructure projects considered the City is also considering creating a number of citywide green policies, and will consider partnering with The Natural Step Monona on creating a community education program.

Pathways to 25 x 25

The City of Monona will need to take both some short term and long term actions to successfully meet our 25x25 goals. In the short term the City will work on creating and implementing a citywide policy for purchasing green and energy efficient products such as cleaning products, office equipment, vehicles, etc. The City will also work with the Sustainability Committee and The Natural Step Monona to create and implement a community wide education program. This program will educate the citizens and City staff on ways they can be more sustainable.

The City will also undertake some long term actions such as energy efficiency improvements to City facilities and renewable energy and fuel projects. Using the Focus on Energy audits we will look for projects at City facilities that will improve the energy efficiency of those facilities. This will allow us to reduce the amount of energy needed to be produced by renewable projects.

The City of Monona will be considering a variety of renewable projects including solar and geothermal, along with testing bio-diesel and E85 fuels for our City vehicles. The renewable projects will be outlined in greater detail in future sections of this document.

Projects Selected – Explanation

Green Policies and Procedures

The City will develop and implement a green purchasing policy in 2011. This policy will put an emphasis on purchasing sustainable products, purchasing energy efficient products (energy star products), and vehicle purchases should be at least 5% more efficient than the vehicle it is replacing.

We will also review opportunities to implement sustainable and conservation practices throughout the City.

Education

Beginning in 2011 the City of Monona will work with The Natural Step Monona and Sustainability Committee to create a community wide education program. This program will help educate Monona citizens and City Staff on sustainable practices that can be implemented to become more energy efficient. This program will also educate the community on the efforts the City is undertaking to produce renewable energy and measures citizen take to produce renewable energy.

We will also consider adding a section to our website to help promote the energy efficiency efforts the City is undertaking and efforts citizens can take to improve efficiency in their homes.

Energy Efficiency Projects

In 2011 the City of Monona will undertake multiple energy efficiency projects. Boilers will be replaced with high efficiency boilers at City Hall and Library. 164 Windows will be replaced and City Hall. The air cooled condensing units will be replaced at the Community Center. Pneumatic thermostat controls will be replaced with digital thermostats at City Hall, Library, and Community Center. Also the main circulating pump at the pool will be replaced with a variable frequency pump.

In future years we will consider upgrading our other facilities heating, cooling, and air handling systems as well as replacing the pumps at our three wells and reservoirs with variable frequency pumps.

Renewable Projects

In 2011 the City of Monona will consider purchasing 400,000 kWh of wind power from our local utility Madison gas and Electric. In 2013 we will consider installing solar panels on the park shelter in Ahuska Park. In the years 2016-2025 will consider installing three additional solar electric projects as well as a geothermal system that will heat and cool the civic campus (City Hall, Library, and Community Center).

Fuel Projects / Electric Vehicle Purchases

The City of Monona selected as a goal to replace 25% of our unleaded and diesel consumption with E85 and 5% bio-diesel. After a testing period we will then consider whether to continue and or expand the fuel replacement program. Also after the testing period we will determine if we should change the blend of bio-diesel based on the results of the tests.

The City is also considering purchasing two neighborhood electric vehicles for use by the Parks and Recreation Department and the Public Works Department. The City of Monona will also be working with Madison Gas and Electric to install two charging stations on our civic campus for use by electric vehicle owners. The City may also consider purchasing additional electric vehicles as battery technology improves.

Narrative – Potential Renewable Feedstocks

The City of Monona is located in an urban area and has no farmland that could be used to grow renewable feedstocks. In the future, however, new technologies may be developed that would allow the City to use feedstocks such as algae or yard waste to produce renewable energy.

Existing Unknowns – Necessary Information for Future

The biggest unknown is how the City of Monona will fund the various projects over the next 15 years. With current budgets being tight and a poor economic outlook the City will need to explore alternate funding sources such as grants as well as explore public private partnerships in order to achieve our 25 by 25 goals. If the City can't secure alternate funding will the citizens of Monona support the use of tax dollars to implement the 25 by 25 projects? Public and political support will be necessary to achieve these goals.

Another large unknown is the economy and energy prices. Prior to the economic down turn energy prices were high, especially fuel prices (gasoline, diesel, and natural gas). Fuel prices have come off their highest levels but are still higher than earlier in the decade. When the economy improves will energy prices continue to go up? If so does that change the City's project priorities?

Another unknown is how technology will change over the timeframe of this plan. Will it make sense to delay certain projects until the technology has matured? As a City we will need to explore what projects can be done cost effectively with current technology.

Action Steps – Immediate & Long - Term

The table below details the immediate and long-term action steps needed to achieve our 25x25 goals.

Project	Year	Timeframe
Implement Green Purchasing Policy	2011	Immediate
Create Public Education Program	2011	Immediate
Install Two Electric Vehicle Charging Stations	2011	Immediate
Purchase Renewable Energy	2011	Immediate
Replace Boilers - City Hall, Library	2011	Immediate
Replace Air Cooled Condensing Units - Community Center	2011	Immediate
Replace Windows - City Hall	2011	Immediate
Install Variable Frequency Pump - Pool	2011	Immediate
Purchase Neighborhood Electric Vehicle - Park & Rec Department	2012	Long-Term
Install Solar Electric System - Ahuska Park	2013	Long-Term
Purchase Neighborhood Electric Vehicle - Public Works Department	2013	Long-Term
Bio-Diesel Test Project	2014	Long-Term
E85 Test Project	2014	Long-Term
Replace Air Handling Units - City Hall, Community Center, Library	2014	Long-Term
Replace Boilers - Community Center	2014	Long-Term
Building Energy Efficiency Upgrades	2015	Long-Term
Replace Well and Reservoir Pumps with Variable Frequency Pumps	2016-2018	Long-Term
Install Solar Electric System - Well 3	2016	Long-Term
Install Solar Electric System - City Hall	2018	Long-Term
Install Solar Electric System - Fire Department	2020	Long-Term
Geothermal Heating and Cooling System - City Hall, Library, Community Center	2024	Long-Term

Energy Independence Team Members

Energy Committee

Patrick Marsh – City Administrator

Paul Kachelmeier – Planning/Community Development Coordinator

Richard Vela – Director of Public Works/City Engineer

Jacob Anderson - Parks and Recreation Director

Jeff Greger – Assistant to City Engineer/GIS Specialist

Leah Kimmell - Executive Assistant, Administration

Heather Gates – Citizen, Executive Director of The Natural Step Monona

Appendix: Baseline Energy Consumption Data – Spreadsheets

Resolution No. 09-10-1655

**A Resolution Supporting the Office of Energy Independence “25 x 25” Goal
And Declaring Monona a Wisconsin Energy Independent Community Partner**

WHEREAS, Governor Jim Doyle created an Office of Energy Independence with the vision of generating 25% of electricity and transportation fuels from renewable resources by the year 2025 (“25 x 25”), capturing 10% of the emerging bio industry and renewable energy market by 2030, and making Wisconsin a national leader in groundbreaking research that will make renewable energy more affordable; and

WHEREAS, the Office of Energy of Independence is seeking voluntary partnership with local units of government to further Governor Doyle’s current vision to achieve the “25 x 25” goal;

WHEREAS, becoming an “Energy Independent Community Partner” provides the City of Monona with additional access to state and federal funding and technical assistance; and

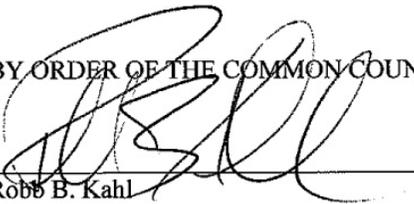
WHEREAS, adopting a “25 x 25” resolution and promoting community efforts toward energy independence are key elements in becoming an “Energy Independent Community Partner”;

NOW, THEREFORE, BE IT RESOLVED that the City of Monona Common Council declares Monona to be a Wisconsin Energy Independent Community Partner and resolves to partner with the Office of Energy Independence and help advance Governor Doyle’s vision for energy independence by:

1. Posting community efforts toward Energy Independence on the City’s website and linking to the Office of Energy Independence,
2. Promoting three Energy Independence Community Events within two years of the date of this resolution, and
3. Supporting Governor Doyle’s vision of obtaining 25 percent of the state’s electricity and 25 percent of its transportation fuels from renewable resources by 2025.

Adopted this 19th day of October, 2009.

BY ORDER OF THE COMMON COUNCIL



Robb B. Kahl
Mayor

ATTEST:



Joan Andrusz
City Clerk

Requested By: Alderman Doug Wood
Council Action:
Council Approval: 10/19/09
Council Disapproval: _____



**Wisconsin Energy Independent Community
Expression of Support**

Community (city, town, village, county, etc)	City of Monona
Population	8,228
Contact Person	Patrick Marsh, City Administrator
Contact Phone	(608) 222-2525
Contact Email	pmarsh@ci.monona.wi.us
Leadership	Mayor Robb B. Kahl

Expression of Support

Pass resolution adopting the State of Wisconsin 25x25 goals

Draft Resolution

Wisconsin Executive Order 192, April 2007

The City of Monona supports Governor Doyle's vision for energy independence of generating 25 percent of the state's electricity and 25 percent of its transportation fuels from renewable resources by 2025.

Community: City of Monona
Date: October 19, 2009
Signature:

Please electronically return completed
Expression of Support
Office of Energy Independence
Brian Driscoll
608-261-8146
brian.driscoll@wisconsin.gov

Energy Independence: One Community at a Time
Office of Energy Independence
17 West Main St. • Madison, WI 53702

<http://power.wisconsin.gov>

Proclamation

WHEREAS, a more prosperous future for our community's economy means making investments in energy efficiency and clean energy today. Well-funded energy research and development will not only help protect our environment and support our communities, but it will also address concerns of global competitiveness and national security. Innovation in energy technology will decrease our oil use, strengthen our economy, and reduce dangerous pollution; and

WHEREAS, as American scientists, engineers, and entrepreneurs bring new and improved energy technologies to homes and businesses in this country and around the world, they will be showing American leadership and vision while also making clean energy the profitable kind of energy. During Energy Awareness Month, we recognize the contributions of individuals, organizations, and companies that are committed to advancing energy innovation and efficiency, and we promote the importance of a clean energy economy to our world; and

WHEREAS, I am committed to leading by example, as an Energy Independent Community, in the use of clean energy and increased energy efficiency. Not only will we lead through our performance, we will also leverage our ability as a customer that can help turn an idea into a great American enterprise. Through intelligent policies that support clean energy businesses, we are ushering in a new era of green energy that will benefit our economic recovery, our security, and our long-term prosperity; and

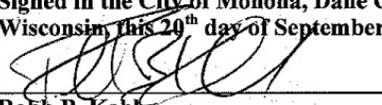
WHEREAS, we are facing a turning point in our community's energy awareness. Never before have we known more than we know today. But we cannot remain where we are today, we need to consume less fossil fuels, and rely more on home-grown, Wisconsin-produced energy; and

WHEREAS, throughout our history, Wisconsinites and Americans have successfully confronted challenges that have tested our determination and our capacity to change. If we are to advance energy and climate security, we must focus on energy efficiency, promote sustainable industries, and accelerate job training and job creation in these areas. As a community, we will continue to lead by innovating and adapting to the marketplace and investing intelligently, so we may have a sustainable future we want for the generations to come.

NOW, THEREFORE, BE IT RESOLVED, that I, Robb B. Kahl, Mayor, and on behalf of the City Council of the City of Monona, Dane County, Wisconsin, do hereby proclaim October as Energy Awareness Month. I call upon the people of our community to mark this month by making clean energy choices that can both rebuild our economy and make it more sustainable.



Signed in the City of Monona, Dane County,
Wisconsin, this 20th day of September, 2010.


Robb B. Kahl
Mayor

2009 Wisconsin Energy Independent Community Partnership

Resolution No. 10-11-1740
Monona Common Council

APPROVING THE CITY OF MONONA'S 25 x 25 PLAN
FOR ENERGY INDEPENDENCE

WHEREAS, Governor Jim Doyle created an Office of Energy Independence with the vision of generating 25% of electricity and transportation fuels from renewable resources by the year 2025 ("25 x 25") and sought partnerships with local units of government to achieve this goal; and,

WHEREAS, the Monona City Council, on October 19, 2009, adopted Resolution 09-10-1655, "A Resolution Supporting the Office of Energy Independence "25 x 25" Goal And Declaring Monona a Wisconsin energy Independent Community Partner;" and,

WHEREAS, in December, 2009, the City of Monona applied for and received a grant from the Wisconsin Office of Energy Independence to develop a plan to achieve our goal of providing 25% of our energy needs from renewable resources by 2025; and,

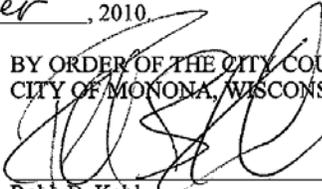
WHEREAS, in January, 2010, the City Administrator appointed and Mayor Robb Kahl approved the formation of a seven-person Energy Committee to develop this plan; and,

WHEREAS, this plan is attached;

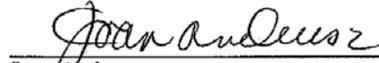
NOW, THEREFORE, BE IT RESOLVED that the Common Council of the City of Monona, Dane County, Wisconsin, hereby approves the City of Monona's 25 x 25 Plan for Energy Independence.

Adopted this 6th day of December, 2010.

BY ORDER OF THE CITY COUNCIL
CITY OF MONONA, WISCONSIN


Robb B. Kahl
Mayor

ATTEST:


Joan Andrusz
City Clerk

Requested By: City Energy Committee

Council Action:
Date Introduced: 11-15-10
Date Approved: _____
Date Disapproved: _____

Your energy usage baseline is **18,727** million (MM) Btus.*
 That baseline is comprised of 2,047,262 kWh,
 86,962 therms,
 17,001 gallons of unleaded,
 and 6,741 gallons of diesel.

By assuming an annual growth rate of **-2.00%** ,
 in 2025 your energy use baseline will be **13,554** MMBtu.

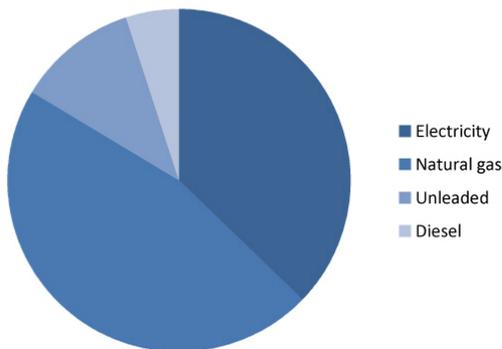
Your 25% renewable energy goal
 for 2025 is therefore **3,389** MMBtu,
 or 18% of your baseline consumption.
 This translates into 993,129 kWh or
 33,886 therms or
 27,327 gallons gas or
 24,378 gallons diesel, or
 some combination
 of those fuels.

* This baseline is an average of 3 years of energy use data.

Monona Energy Baseline: Additional Info

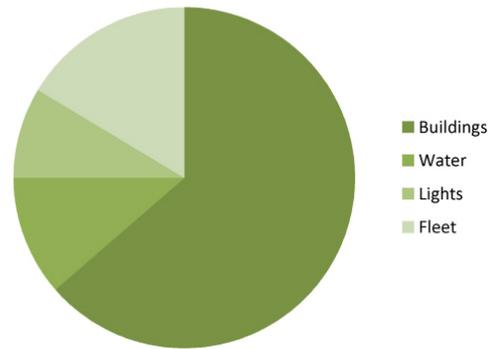
Total Consumption by Energy Type

Energy type	Percent of total Btus
Electricity	37%
Natural gas	46%
Unleaded	11%
Diesel	5%



Total Consumption by End Use

Energy end use	Percent of total Btus
Buildings	64%
Water	11%
Lights	9%
Fleet	16%

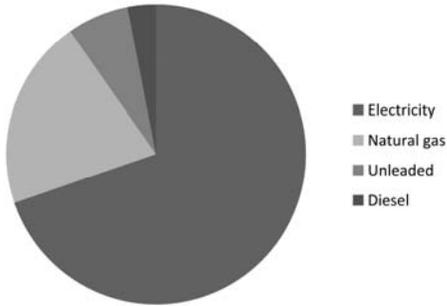


Monona Energy Baseline: Additional Info

Total CO2 Emissions by Energy Type

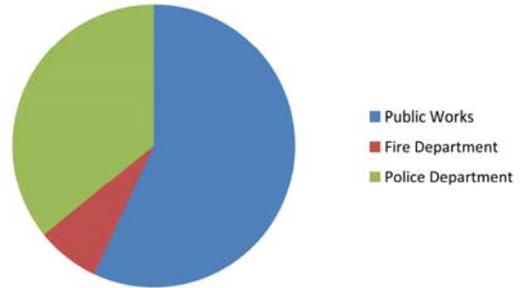
Energy type	Percent of total CO2
Electricity	70%
Natural gas	21%
Unleaded	7%
Diesel	3%

Total: 5 million lbs CO2



Fleet breakdown by department

Department	Percent of total Btus
Public Works	57%
Fire Department	7%
Police Department	36%



2009 Wisconsin Energy Independent Community Partnership

Please direct any questions electronically to:

Brian Driscoll
Community Relations Director
State of Wisconsin
Office of Energy Independence
17 West Main St. Room #429
Madison, WI 53702
brian.driscoll@wisconsin.gov

